

## **AMENDMENTS TO THE SPECIFICATION**

**Please replace the section heading and paragraph beginning at page 6, line 27 to page 7, line 31, with the following rewritten paragraph:**

### **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will be described with reference to the accompanying drawings wherein:

~~Figure A1 is a schematic of a network of one embodiment of the present invention~~

~~Figure A2 is a schematic of a receiver in one embodiment of the present invention~~

~~Figure A3 is a schematic of the functions required in a receiver for content targeting~~

~~Figure A4 is a table representing data for describing targeted content~~

~~Figure A5 is a table representing data for content targeting opportunities.~~

Figure 1 is an overview of a system for targeted content presentation in communications networks according to an embodiment of the present invention;

Figure 2 shows an automated reporting system in accordance with the present invention;

Figure 3 shows a system for presenting target content system in accordance with the present invention;

Figure 4 shows a receiver system in accordance with the present invention;

Figure 5 shows a method for presenting targeted content in accordance with the present invention;

Figure 6 shows a method for presenting targeted content in accordance with the present invention;

Figure 7 shows a method for presenting targeted content in accordance with the present invention;

Figure 8 shows a method for presenting targeted content system in accordance with the present invention;

Figure 9 shows a method for presenting targeted content system in accordance with the present invention;

Figure 10 shows a method for presenting targeted content system in accordance with the present invention; and

Figure 11 shows a method for presenting targeted content system in accordance with the present invention.

**Please replace the paragraph beginning at page 8, lines 7-19, with the following rewritten paragraph:**

Figure A1 3 shows the functional components of a network system 10 for the distribution of content. These components are applicable to a variety of content distribution systems, including cable and satellite television. The components could reside on a single physical system, or they may reside on separate systems linked by one or more communication networks. Multiple instances of each component may also be required depending on the number of content sources used and other parameters. The network system 10 includes one or more content sources, which might be from external sources 11a as well as from internal sources 11b produced by the network system operator. Content may also be available in pre-encoded form from an internal content spooler or server 11c. Content from the spooler/server and other sources may be transmitted in real-time, or slower or faster than real-time for purposes of caching content for deferred viewing.

**Please replace the paragraph beginning at page 9, line 29 to page 10, line 10, with the following rewritten paragraph:**

Figure A2 4 depicts the functions and facilities required for a user to receive the content from a network described in ~~figure A1~~ Figure 3. A receiver's functions and facilities may be contained within a set-top device on the viewing premises or distributed throughout a network. The receiver contains one or more content processing systems 40 (CPS). Each CPS requires a network interface 41 for communication to and from the operators' network(s), a decryptor 42 for deciphering any secured information, a decoder 43 for converting from the network format to the viewing or usage format, and a processing element 44 for handling any instructions, graphics processing, multi-media combining or other formatting required before presentation to the user. A management system 31 is required for co-coordinating the operation of the various functions. Content storage 32 is used to record information pertinent to the usage of the system, and for content storage and playback.

**Please replace the paragraph beginning at page 13, lines 13-27, with the following rewritten paragraph:**

Referring now to ~~figure A3~~ Figure 5 which illustrates the functional components required within a receiver for content targeting. These components together are referred to as the targeting

methods 60 and are required for matching the content to the opportunities. The management methods 61 process the content descriptors and assess which content to retrieve for possible presentation. The presentation methods 62 process the opportunity descriptors and the opportunity events, match the content to the opportunity, present the content, and store the result of the viewing in storage 63. Both the management methods 61 and the presentation methods 62 can access the storage 63 to retrieve data to assist in the decision making process. The reporting methods 64 retrieve and process viewing information, and send the information to a network reporting facility 65. Data used in the decision making process is placed in and retrieved from storage 63 by the management methods 61. The management methods 61 receive or retrieve the data from the network, or from the presentation methods 62 through which the user interfaces to retrieve, add, delete or modify the data.

**Please replace the paragraph beginning at page 14, line 13-26, with the following rewritten paragraph:**

~~Figure A4~~ Table 1 shows a list of content and related characteristics. The content type 81 allows the receiver to determine if it is capable of showing the content. For example, alternate versions of a single ad may be available as different audio/video clips or as a graphical application with interactivity options. A receiver without interactivity would ignore the application version. The type may be represented as a value or as a data structure representing complex options within the piece of content. In one embodiment, the data structure is represented as a data structure showing both the properties and the requirement for presenting those properties. In the table, clip "Ad 1 with optional interactivity" indicates that audio, video and interactivity are present in the clip, but interactivity is not required. A receiver not equipped for interactivity could still show only the audio and video. Clip "Ad 2 with mandatory interactivity" has audio and video that is directly tied to the interactive component, and could not be used by this receiver.

**Please replace the paragraph beginning at page 16, line 3, with the following rewritten paragraph:**

~~Figure A5~~ Table 2 shows a list of content display opportunities.

**Please replace the paragraph beginning at page 16, lines 9-10, with the following rewritten paragraph:**

The opportunity content list 86 shows the content that can be selected for display. This field is related to the content identifier 84 of ~~Figure A4~~ Table 1.

**Please replace the paragraph beginning at page 17, lines 27 to page 18, line 9, with the following rewritten paragraph:**

To give but one example, the opportunity with description "Ad insertion when user returns from pause" in ~~figure A5~~ Table 2 uses method "match\_to\_pause\_duration", and the selection is based on the user returning to viewing after selection the pause function. The method is designed to minimize the annoyance of the user, and is based on the duration of the pause and the time since pause was last used. The results of the algorithm are that:

- The ad will not be shown if there was a return from pause within some definable interval
- If the pause used within some definable period, then content will be selected that is less than some definable length
- If the pause has not been used in some other definable period, then content of duration less than some definable amount will be played.

**Please replace the paragraph beginning at page 18, lines 29-31, with the following rewritten paragraph:**

The content descriptors are transmitted to the receiver in any of the content transmission mechanisms outlined in, but not limited to, the descriptions of ~~figure A4~~ Figure 3.

**Please replace the paragraph beginning at page 34, lines 9-16, with the following rewritten paragraph:**

In accordance with the present invention, there is further provided a method for targeted content presentation in a communications network for regularly scheduled content opportunities, the method comprising the steps of: monitoring the programming stream for opportunities and content descriptors; determining the source for alternate content; matching the opportunity to the available content and the viewer characteristics; presenting ~~[[In]]~~ in one embodiment, shown in

Figure 1, the system includes a delivery engine 250, a matching engine 260/270, a combiner 240, and a micro decision engine (MDE) 230.

**Please replace the paragraph beginning at page 34, lines 18-20, with the following rewritten paragraph:**

The matching engine 260/270, delivery engine 250, and combiner 240 are located at one or more facilities head-end, while are located at network points and/or on receivers connected to viewing devices such as televisions and personal computers.

**Please replace the paragraph beginning at page 34, lines 22-26, with the following rewritten paragraph:**

The matching engine 260/270 is responsible for generating schedules, meta-data 130 and triggers that, combined with content, are broadcast via the delivery engine 250 to MDE's 230. The matching engine 260/270 also communicates with the delivery engine 250 to forward configuration triggers that inform an MDE 230 of a requirement to replace particular MDE sub-components in part or in whole.

**Please replace the paragraph beginning at page 34, lines 28-31, with the following rewritten paragraph:**

The delivery engine 250 is located at network broadcast points and is responsible for ensuring the coordination and delivery of profile data 110 and content 100. The delivery engine 250 can be deployed across a plurality of hardware platforms at one or more points to support load balancing and capacity planning needs.

**Please replace the paragraph beginning at page 35, lines 13-17, with the following rewritten paragraph:**

The delivery engine 250 sends meta-data 130 and triggers, via the combiner 240, through the broadcast network 160 to the MDE 230 for the purposes of targeted content delivery and presentation. System middleware elements collect information from the combiner that broadcasts reporting meta-information to the receivers 170 using standard broadcast equipment such as MPEG2 multiplexers and encoders.

**Please replace the paragraph beginning at page 35, lines 19-28, with the following rewritten paragraph:**

MDE's 230 are responsible for "understanding" regular broadcast schedules 210, setting up and managing demographic profiles 200, recognizing functional opportunities described as user interactions, collecting appropriate targeting content, and storing selected content 190 on the receiver 170. MDE's 230 make final decisions on how best to provide targeted content to the viewer. Opportunities for targeting content are created at network operator sites and are sent to collections of digital receivers for processing and presentation of targeted content. Targeting opportunities can also be provided at the receiver, and are the subject of the Applicant's pending application filed Oct. 13, 2000 Ser. No. 09/687,449 entitled "Method and System for Targeted Advertising".

**Please replace the paragraph beginning at page 35, line 30 to page 36, line 4, with the following rewritten paragraph:**

In an embodiment of the present invention shown in Figure 2, the system can further include a reporting component 1036 for providing updated profile information 110, and is the subject of the Applicant's co-pending application entitled "Method and System for Automated Reporting in a Communications Network". In this reporting embodiment, the MDE 230 is further responsible for creating and managing audit logs 220 for reporting back on user viewing data.

**Please replace the paragraph beginning at page 36, lines 6-17 with the following rewritten paragraph:**

The MDE 230 receives profile information 110 on viewers from the matching engine 260/270 using the delivery engine 250. The matching engine manages and controls the delivery of such information received from broadcasters and multiple services operator; information that can be based on subscription information provided to the operator by the viewer and/or information the operator has acquired from other sources. The viewer profile data can be forwarded in encrypted or unencrypted format. In an embodiment of the present invention, the data is kept in encrypted format within the facilities of a conditional access system to prevent unauthorized access, as would be known to persons skilled in the art. In this way, the processing may prohibit the retrieval of data by unauthorized functions or functions outside of the secure facilities, with only

the results of the match returned to the requesting method.

**Please add the following new paragraphs on page 67, after line 31:**

Figure 6 is a flowchart 300 that shows a method for presenting targeted content in accordance with one embodiment of the present invention. In this embodiment a short period, numbered in minutes is utilized.

In step 304 AD Schedule Data including Opportunities Schedules and AD Opportunities for the few minutes following a determined time, is retrieved from a Schedule DB database 302 and is published to various subscribers.

In step 306 the published schedule data is used to prepare an AD Insertion Complex 316 with AD Schedule Data and temporal data regarding when to splice Ads is forwarded to the AD Insertion Complex 316 as well. Simultaneously, list of opportunities or Opportunity Maps; matching criteria for the Matching Opportunities; content identifiers for each match or List of Content and associated Types; and List of Profiles and Identify Filters or Profile Data are prepared in steps 308, 310, 312, and 314 respectively and sent to the interactive television (ITV) Spooler 318.

In step 320, digitized or Digital Data including Opportunity Maps and Profile Targets is transferred from the ITV spooler through a network to a set top box (STB) 322. From there, in step 324, Data Flow is processed and Targeted Content is presented to a TV Viewer 326.

Figure 7 is a flowchart 340 that shows a method for presenting targeted content in accordance with one embodiment of the present invention. In this embodiment the period is longer than that of Figure 6 and extends to 24 hours.

In step 346 AD Schedule Data for the next 24 hours is retrieved from a Schedule DB database 344 and is published to subscribers. Simultaneously, matching criteria for content or Matching content; Content Listing; Profiles and Filters; and Schedule Details for content are prepared in steps 348, 350, 352, and 354 respectively and sent to the receiver 356.

In step 358, Profile Data, Matching Criteria, and the Full Content List are received and the Matching Criteria is evaluated against the Profile Data. The resulting Content Pick List is processed in step 362 against Storage Facilities or STB Storage Capabilities retrieved from an STB Storage Management facility 364.

A Content Storage List produced in step 362 is acquired together with Content from a Content Store 342 in the Content Acquisition step 360, which sends Appropriate Content to the STB Storage Management facility 364.

Figure 8 is a flowchart of process 380 showing how the Opportunity Map, described in Figure 6 is processed in the receiver 170. First, in step 382 the Opportunity Map is read in and in step 384 schedule and content information is determined. In step 386 content is matched against the receiver profile and the best match is selected. In step 390 it is determined if the content is available ahead of time.

If the content is available ahead of time, and local storage is available (step 396), the amount of the available local storage is determined in step 394. Then, if the available local storage is sufficient for the content (step 402) in step 404 content is copied to local storage. The copy is just one element of the storage management functions provided by the micro decision engine (MDE) 230 (Figure 1). Prior to the copy security rights will be checked and garbage collection may be invoked to clear up space. If the copy step is determined to be successful (step 406), an audit log is written in step 408 and the process 380 moves to step 410 to wait for the next trigger. Alternatively, if the storage is not sufficient (step 403) or the copy is not determined to be successful (step 406), the process 480 indicates insufficiency of the local storage (step 388) and repeats step 390.

If in step 390 it is determined that the content is not available ahead of time, or in step 394 the amount of the available local storage is determined not to be sufficient, the process 380 executes step 392. If step 392 determines that distribution will allow a just-in-time fetch of content, TCP/IP client-server support is used to set up for just-in-time fetch over IP in step 400. Alternatively, if step 392 determines real time switch only, set up for real time switch is



performed in step 398. In both cases process 380 moves to step 410 to wait for the next trigger.

Figure 9 is a flowchart of process 430, showing Content Playback for a-priori schedule based events. In step 432 an a-priori Opportunity Schedule and other decision information are read in. If a match has been made for this opportunity (step 436), matched AD information is retrieved in step 438.

If the AD is in a carousel (step 440) it is loaded into a buffer in 444 and a timer is set for switching it to AD stream from the buffer in step 448. Alternatively, if the AD is not in the carousel (step 440), and

- (1) AD content is in the local storage (step 442) then set up is performed for switching to AD stream from disk step 450;
- (2) AD content is not in the local storage (step 442) and the AD is to be received from an AD server (step 446), then in step 454 the AD is fetched from the Ad server using TCP/IP-server support and in step 456 a set up is performed for switching memory from a buffer. An AD is streamed into the buffer from the AD Server and also out to the screen. The streaming in and out simultaneously is a function of the buffer size available on the receiver;
- (3) AD content is not in the local storage (step 442) and the AD is not to be received from an AD server (step 446), then in step 452 a set up is performed for a PID switch as a real time switch only.

After the steps 448, 450, 452, and 456, a presentation trigger is received and a timer is set in step 458 and in step 460 a switch to stream is made and the AD is played when the timer goes off. This flow does not indicate that the viewing of an AD can be interrupted by the viewer. Based on how the ADs were sold, one possible outcome is that whenever the viewer switches from channel to channel the exact same ad is shown on all channels. We call this the super bowl effect.

If a match has not been made for this opportunity (step 436), the prime (in-stream) AD is allowed to play (step 466). After either step 464 or 466 an audit log is written in step 464 and

the process 430 is terminated in step 470.

Figure 10 is a flowchart of process 480 showing content playback for functional opportunity. Functional opportunities include any remote function invocation, setting up a personal video recorder (PVR) application. A flow NOT shown here could be one wherein disk space management is to be done when other applications, such as PVR, need space, which was used.

In step 482 Function Notification that PVR being programmed, pause on remote, EPG being accessed is received. In step 484 lookup of the functional Opportunity Map is performed to determine the AD to present.

If the AD is in the carousel (step 488), it is loaded in step 486 from that carousel. Alternatively, if the AD is not in the carousel (step 488),

- (1) If the AD content is in the local storage (step 490) it is loaded from the local store in step 492;
- (2) If the AD content is not in the local storage (step 490) and a Real Time Switch is possible (step 496) a switch to AD PID is made in step 500;
- (3) If the AD content is not in the local storage (step 490) and a Real Time Switch is not possible (step 496) and the step 498 determines that the AD to be received from an AD server, the AD is loaded from the AD Server using TCP/IP server support in step 502;
- (4) If the AD content is not in the local storage (step 490) and a Real Time Switch is not possible (step 496) and the step 498 determines that the AD is not to be received from an AD server, the process 480 returns to its initial step 482.

After the steps 486, 492, 500, and 502, the AD is played in step 504, an audit log is written in step 506 and the process 480 completes in step 508.

Figure 11 is a flowchart of a reporting process 520. Step 526 starts reporting component after receiving either (a) an internal report timer event, internal event indications may be a log too big, log timer went off - this timer can be configured, etc. issued in step 522 and (b) a report trigger received in step 524 is matched to the trigger profile in step 530. A trigger meta-data is read in

step 532 and a report writer is set up in step 536. This set up includes set up of a reporting server address and tag what items need to be reported on. In step 538 a secure audit log is read and a report is prepared. In step 540 trigger report transmission process is performed. The transmission process is an abstraction for the many ways by which a report may be sent. This could be via a modem aware component, or a TCP/IP component or a Broadband aware component or it could be one which knows how to invoke the conditional access (CA) system for a path back to the SMS system.

If the report succeed (step 546) a report success log is written in step 550, otherwise a report failed log is written in step 548. Then the existing log space is managed in step 552. This step is disk space management functionality. The outcome could be that some logs are pruned from the system. Pruning is a function of the space available and the configuration of the MDE.”